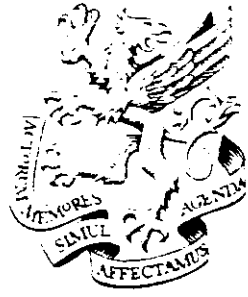
HEI – The Start of a New Hawaii Tradition

An Electric Utility's Evolution, From the Monarchy to 21st Century

C. DUDLEY PRATT, JR.



"Were American Newcomen to do naught else, our work is well done if we succeed in sharing with America a strengthened inspiration to continue the struggle towards a nobler Civilization— through wider knowledge and understanding of the hopes, ambitions, and deeds of leaders in the past who have upheld Civilization's material progress. As we look backward, let us look forward."

—CHARLES PENROSE
(1886-1958)
Senior Vice-President for North America
The Newcomen Society
for the study of the history of
Engineering and Technology
(1923-1957)
Chairman for North America
(1958)

This statement, crystallizing a broad purpose of the Society, was first read at the Newcomen Meeting at New York World's Fair on August 5, 1939, when American Newcomen were guests of The British Government.

"Actorum Memores simul affectamus Agenda"

This address, dealing with the history of Hawaiian Electric Industries, Inc., was delivered at a "1988 Hawaii Meeting" of The Newcomen Society of the United States held in Honolulu, when Mr. C. Dudley Pratt, Jr., was the guest of honor and speaker on October 20th, 1988.

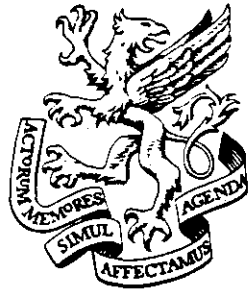
"Our story . . . is an on-going chronicle of choices which a democratic system has allowed us to make, and of alternatives which laws of economics forced us to consider."

—C. DUDLEY PRATT, JR.

HEI – The Start of a New Hawaii Tradition

An Electric Utility's Evolution, From the Monarchy to 21st Century

C. DUDLEY PRATT, JR.
PRESIDENT AND CHIEF EXECUTIVE OFFICER
HAWAIIAN ELECTRIC INDUSTRIES, INC.
HONOLULU, HAWAII



THE NEWCOMEN SOCIETY OF THE UNITED STATES
NEW YORK EXTON PRINCETON PORTLAND
1988

Newcomen Publication Number 1316

Library of Congress
Catalog Card Number 88-62838

First Printing: October 1988

SET UP, PRINTED AND BOUND IN THE UNITED STATES OF AMERICA FOR THE NEWCOMEN SOCIETY OF THE UNITED STATES BY PRINCETON UNIVERSITY PRESS

INTRODUCTION OF MR. PRATT IN HONOLULU ON OCTOBER 20TH, 1988, BY MR. RICHARD HENDERSON, PRESIDENT OF COMTEC, INCORPORATED AND THE REALTY INVESTMENT COMPANY, LIMITED, AND A DIRECTOR OF HAWAIIAN ELECTRIC INDUSTRIES

Members of Newcomen and guests:

IN 1828, a small ship carrying members of the Third Company of Calvinist Missionaries left Boston on a 148-day voyage around the Horn to the relatively newly chartered Islands of Hawaii. Those aboard had a vision—a vision of a better life for others, if not for themselves.

Among those aboard this small ship were our keynote speaker's paternal ancestors. The commitment that brought these missionaries to Hawaii was evidence of a family trait that is reflected in our speaker's many accomplishments.

It's my pleasure to introduce C. Dudley Pratt, Jr. to you this evening. He'll be speaking to us as the chairman and chief executive officer of Hawaiian Electric Company, and president and CEO of Hawaiian Electric Industries, or HEI.

Dudley graduated from Yale, receiving a bachelor's degree in civil engineering with honors in 1950. He holds two master's degrees, one in structural engineering from Yale and another in business administration from the University of Hawaii.

He joined Hawaiian Electric Company in 1953 as a designer in the Engineering Department and was promoted to manager of Hawaiian Electric's Distribution Department in 1961. During that period, Dudley oversaw construction of the company's first 138,000-volt transmission line. He rose to vice president of Planning in 1971, became executive vice president in 1980, and was named president of Hawaiian Electric in 1981.

In 1983, after more than thirty years with the utility, Dudley successfully completed a plan to restructure Hawaiian Electric by creating a parent company, HEI, and becoming its president. He also serves on its board of directors, as well as on the boards of its seven subsidiary companies.

C. DUDLEY PRATT, JR.
PRESIDENT AND CHIEF EXECUTIVE OFFICER
HAWAIIAN ELECTRIC INDUSTRIES, INC.

Dudley has been a key spokesperson for renewable energy and economic development in the state of Hawaii. His commitment goes beyond words and merely being listed on letterheads. Dudley has put his words into action by serving as this year's chairman for the Chamber of Commerce of Hawaii. He is also a director of the Economic Development Corporation of Honolulu, chairman of the Hawaii Business Roundtable, president of the Pacific Coast Electrical Association, and member and past director of the Edison Electric Institute.

Dudley has a very fond aloha for our islands. This love affair can be traced back to his family's roots and is evidenced by his many

community activities which include board memberships with the Aloha Council of the Boy Scouts of America, Hawaii Family Stress Center and the Academy of the Pacific.

A son of Hawaii, Dudley continues to demonstrate his devotion to Hawaii and his island heritage with his roles as chairman of the Historic Hawaii Foundation, and directorships on the boards of Iolani Palace, the Hawaiian Historical Society and the Hawaii Maritime Center.

A strong advocate of good education, Dudley is a member of the advisory councils at the University of Hawaii, Chaminade and Hawaii Pacific College. Through his leadership and inspiration, an energy chair was created at the University of Hawaii and funded by HEI.

In October 1991, just three short years from now, we will celebrate the centennial of Hawaiian Electric Company, and we'll have a lot to reflect upon. The evolution and growth of Hawaiian Electric to HEI, an even stronger company which fills the diverse needs of Hawaii's people, is the direct result of Dudley's foresight. And the sagacity and determination exemplified by those who came over on that small ship 160 years ago is a legacy perpetuated by our speaker.

We're honored tonight that The Newcomen Society has chosen to recognize Hawaiian Electric Company and HEI, and we're equally privileged to hear Dudley's thoughts about their evolution.

I'm pleased to present C. DUDLEY PRATT, JR.

Fellow members of Newcomen and guests:

ALOHA, Ladies and Gentlemen. I am pleased and grateful to be here this evening to talk about the evolution of one great company, and the beginnings of another.

Our story begins in the days when the streets of Honolulu were dark. It has no ending, as yet. It is an on-going chronicle of choices which a democratic system has allowed us to make, and of alternatives which laws of economics forced us to consider.

Hawaiian Electric Industries—HEI—is in its infancy as a company and stands not at the end of a tradition, but at the start of one. HEI is the result of two factors—a remorseless rule that states that you either grow or die, and a concomitant creative impulse that drives men to achieve what it is possible to achieve within their sphere.

In 1981, the economy of the nation and of Hawaii was not in the best of shape. Nationally there was a sluggishness and a continuing concern for America's dependence on foreign oil sources. In the islands, tourism, the leading industry, was flat. For one ninety-year-old Hawaiian industry it was a difficult and challenging time. Hawaiian Electric Company faced lackluster energy sales and a decline in energy use by its residential customers. The price of oil, which impacted on electricity costs, continued to be a nagging problem. Despite decades of stability, the future for Hawaiian Electric appeared to be one of slow growth, or no growth at all. In my mind it was an intolerable situation.

We had three interest groups to consider—the stockholders, the employees and the customers. As a longtime Hawaiian company we also needed to think about the Hawaiian public as a whole, and what actions we could take that would best serve Hawaii's economy. The rapid growth of Hawaii peaked in the early 1970s and as an industry, we faced a serious situation. Hawaiian Electric manufactures electricity by burning fuel oil, and electricity prices started upward in reaction to the higher cost of oil. Consequently, customers began to use less electricity to offset the higher rates. There was a real possibility that to keep the company alive we would have to request rate increases, while in turn we were doing nothing but maintaining the status quo.

We looked at alternatives. We could remain an electric company

only and use cash we were generating and not utilizing in the electric company to pay higher dividends. We could use the money to buy back stock and shrink the company, in theory increasing the value of the stock to the owners by making it harder to buy. That outflow of money would have benefitted the owners for a time but that would have been signing the death warrant of the company. And we had our customers and employees to consider.

The juxtaposition of time and events dictated that we had to progress, to grow. To be successful in the future we had to create that situation in which stockholders, employees and customers all were well served. I had been president and chief executive officer only a few months, but I was convinced we needed a corporate restructuring, and something more.

On July 22, 1981, Hawaiian Electric Company's Board of Directors received from management a bold new restructuring plan that would allow the company to participate more fully in the development of alternate energy and take advantage of other business opportunities. The bottom line would be the formation of a new parent company to be called Hawaiian Electric Industries.

The plan was the culmination of hours and hours of researching, thinking, planning—and vision. In reaching that point, we also had to stop and take a look back into our corporate past. To become Hawaiian Electric Industries was to take advantage of the here and now, but there was a necessity to go back, for perspective, and look at our roots.

❦

On October 19, 1879, Thomas Edison tested what was to become the world's first successful incandescent lamp. It burned for forty hours, and among those who noted that achievement was Hawaii's King Kalakaua. In 1881, the king and his attorney general, Armstrong, visited Edison in New York, where Edison demonstrated the state-of-the-art in lighting. The attorney general engaged Edison in a lighthearted discussion about the possibility of Kilauea Volcano providing enough energy to run America—an early-day focus on the potential of geothermal energy. The king's interest was primarily in whether electricity was here to stay and if it might replace the gas

lights on Honolulu streets—lights that ran out of fuel around 3:00 A.M. and left the city dark.

Hawaii was, and is, the most remote inhabited landfall on earth, but even a century and a half ago the quality of thought was not necessarily isolated. By 1832 a missionary doctor on Maui demonstrated a homemade leyden jar and apparently gave his patients a jolt of electricity now and then, believing it to be beneficial. By 1872 a telegraph system was in operation and in 1878, also on Maui, the first telephone was installed. Maui also was ahead of the rest of the islands with the use of electricity, for in 1881, the same year that King Kalakaua visited Thomas Edison, Spreckelsville Mill Number One pioneered the use of electric lights in Hawaii.

Obviously it would be Honolulu, with its population of more than 20,000 and its stature as the seat of government, that would be the locus of large-scale lighting efforts. In 1886 two men stepped forward and sought contracts with his majesty's government to light Honolulu streets with electricity.

In the hot days of July, D. B. Smith stood before the king's ministers in session and asked for a contract to use the new incandescent electric light bulbs on city streets. He represented the Thompson-Houston Electric Company. His competition was C. O. Berger, representing the Brush Electric Company, proponents of electric arc lamps. Brush wanted the contract badly because he had just failed to win the rights to light the streets with gas. Now he wanted to use both gas and arc lamps, and had acquired a dynamo.

Berger positioned his dynamo at the Honolulu Iron Works on Marin Lane, at the end of Merchant Street. He strung overhead wires to carry the current a half mile to Iolani Palace square. He hung one arc lamp in front of the palace, one at the Richards Street gate, one across King Street at Alii'olani Hale and two on King Street itself.

Berger scheduled his demonstration for a Wednesday evening. It was July 21, and the next morning the *Pacific Commercial Advertiser* wrote:

"Shortly after 7 o'clock last night the electricity was turned on and, as soon as darkness increased, the vicinity of Palace Square was flooded with a soft but brilliant light, which turned the night into

KING DAVID KALAKAUA INTRODUCED ELECTRIC LIGHTING TO HIS SUBJECTS IN 1886. HIS ROYAL HIGHNESS HAD AUTHORIZED IOLANI PALACE TO BE WIRED FOR ELECTRIC LIGHTS BY THE TIME THIS PICTURE WAS TAKEN (NOTE LIGHT FIXTURE)

day . . . By 8 o'clock an immense crowd had gathered. Before 9 o'clock the Royal Hawaiian Military Band commenced playing and the Military Companies soon marched into the square. The battalion drill took place under the command of His Majesty the King . . . the evolutions of the battalion could be clearly seen by the aid of the electric lights . . . a tea party was given under the auspices of the Society for the Education of Hawaiian Children organized by Her Royal Highness the Princess Liliu'okalani and Her Royal Highness the Princess Likelike . . .

"The Palace was brightly illuminated, and the large crowd moving among the trees and tents made a pretty picture. The evening passed pleasantly until after 11 o'clock. After the band left, the crowd slowly dispersed."

It should have been an auspicious beginning but it soon grew into controversy. While Berger was arranging his demonstration, Smith was appealing to the Legislature, and it was Smith who caused that body to take a look at the two men and their proposals. Bills intro-

duced by both men ultimately failed. Berger disappeared from the scene and Smith stayed on, eventually to build a fifty-light electric plant on the grounds of the palace. It was owned by the government and consisted of a small steam engine, a dynamo for incandescent lamps and a twelve-light arc dynamo.

By March 1888, the king's system included a hydroelectric plant in Nuuanu Valley, possibly the first of its kind west of the Rockies. Princess Kaiulani, daughter of a Scots father and a Hawaiian mother, had the honor of illuminating the streets of Honolulu for the first time with electric lights. It was March 12, 1888.

From the beginning a lack of rain plagued the Nuuanu plant. The water wheel frequently failed to provide enough power to light the city streets, much less private offices and homes. By 1890 the Legislature was wrestling with bills to expand the government-owned system, and by now the city's population was more than 30,000. The government had eighty-three arc and five incandescent street lights, plus eight incandescent lights to illuminate a clock tower. House lighting totaled 797 lamps.

The Legislature failed to agree on what course of action to take—not for the last time—and when it did act it did not allocate enough money to maintain the small hydroelectric plant.

Into this situation stepped Edwin Oscar White, manager of E. O. Hall & Son, a retail house. He was also the son-in-law of Jonathan Austin, a Civil War veteran and lawyer who from 1888 to 1890 had served as Hawaii's minister of Foreign Affairs. Austin drew up a prospectus for a privately-owned electric company. Simultaneously, he had electric lines strung from the dynamo in the E. O. Hall Building to his law office 100 yards away. In his office he installed electric lights and a small motor that powered a sewing machine and an electric fan. In what was undoubtedly the first air-conditioned law office in Hawaii, Austin called a meeting to discuss the founding of an organization that would generate and sell electric power in Honolulu and the surrounding area.

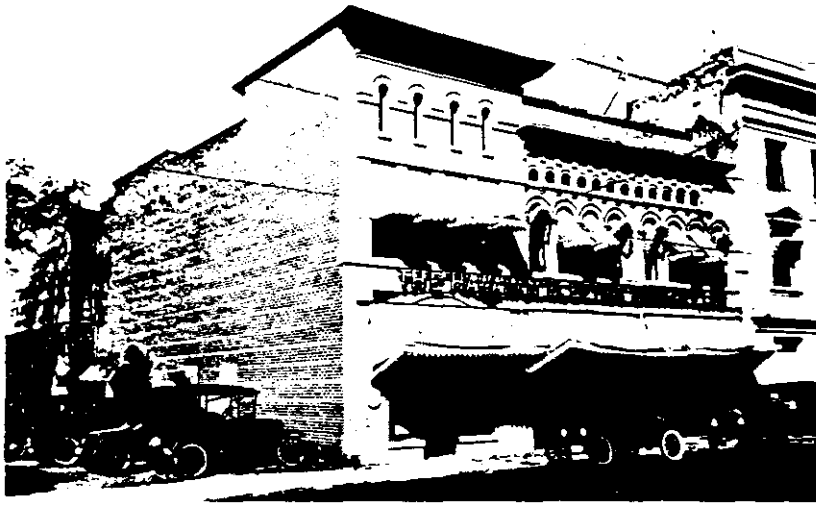
The meeting was attended by Austin; William W. Hall, the son of E. O. Hall; William Lockwood; and Austin's son-in-law, Edwin Oscar White. It was the first of a number of sessions that went on for forty-two days, and then, on May 7, 1891, the Hawaiian Electric

THE E. O. HALL BUILDING COULD BE CALLED ONE OF HONOLULU'S FIRST POWER PLANT SITES; AN ELECTRIC DYNAMO HOUSED THERE WAS USED BY ORGANIZERS OF HAWAIIAN ELECTRIC COMPANY IN 1891 TO DEMONSTRATE ELECTRICITY

Company was recorded with the government as a co-partnership. Five months later, on October 13, the co-partnership was dissolved when the company was incorporated. Total number of shares outstanding at the time of incorporation was 145; paid-in capital totaled $20,000 and assets were $17,000, including a twelve-year lease on downtown Honolulu property where a small generating plant had been built the previous summer.

Early in 1893, Queen Liliu'okalani was placed under house arrest and ultimately deposed. A provisional government was formed, headed by Sanford B. Dole, and from this government Hawaiian Electric received an exclusive franchise to furnish electric light and power to Honolulu, the franchise to run for sixteen years. The franchise also carried an obligation for the company to serve everyone on the island who wanted to be a customer.

Through these somewhat unsettled times in Hawaii, the electric company had been expanding, and in 1894 built a new plant with a 400-horsepower generator on the site now occupied by the company's Ala Moana plant on Honolulu's waterfront. The previous year had seen the company's first increase in capitalization, an increase up to $150,000; in 1895 it was raised to $250,000. Two years later a third increase brought capitalization to $350,000 and the company's first dividend, 3 percent on its capitalization, was paid that year.



HAWAIIAN ELECTRIC COMPANY OCCUPIED THIS DOWNTOWN HONOLULU BUILDING FROM 1900 TO 1927, WHEN A NEW HEADQUARTERS WAS BUILT ON THE PARKING LOT AT LEFT; IT IS STILL OCCUPIED BY HECO AND HEI

The year 1898 dawned without any startling evidence that it would be such a momentous year for Hawaii, as well as the rest of the world. Admiral Dewey had destroyed the Spanish navy in Manila Bay, and the global nature of the war caused an immediate military interest in Hawaii as a mid-Pacific military base. A joint resolution was introduced in both houses of Congress calling for the annexation of Hawaii to the United States. On July 7, 1898, President William McKinley signed the Treaty of Annexation, putting Hawaii into protectorate status. In 1900, Congress passed the Organic Act that made Hawaii a territory and an inseparable part of the United States.

Whatever the other effects of these actions, they created a favorable political climate in which local industries could begin to plan for the future.

Honolulu had a population of 60,000 in 1901, an 87 percent increase in ten years. The city was spreading up the valleys and out toward the duck ponds of Waikiki, and as the city grew, so did Hawaiian Electric. That year it merged with the People's Ice and Cold Storage Company to provide electric refrigeration. The merger

increased investment in the company, now capitalized at $500,000. The following year Congress granted Hawaiian Electric a perpetual franchise and made it possible for the company to enjoy long-range planning. In the same year, the company installed electric meters and introduced a sliding rate scale.

Perpetual franchise or not, the year 1913 found Hawaiian Electric in an unexpected battle to protect itself. Outside interests wanted to establish a second electric company in Hawaii, and the Territorial Legislature passed a bill making it possible. Governor Walter F. Frear vetoed the bill because of wide public support for the veto. The legislature that year voted to establish Hawaii's, first Public Utilities Commission to regulate all companies serving the community under government franchise. That year operating control of the company passed into the hands of the Cooke and Atherton families, which appointed a manager who reduced residential rates, lowered the minimum monthly service fee and brought about a large increase in customers.

The years before World War I saw steady growth in the Territory of Hawaii and in Hawaiian Electric. The company installed Hawaii's first steam turbine in 1907 in its Honolulu plant. By 1911 the company's total electrical energy output reached four million kilowatt-hours, and the transmission system extended from Moanalua Park north of the city to Waialae, behind Diamond Head, and from the waterfront to lower Nuuanu Valley.

By now the company's wide range of customers included the army, the navy, the pineapple canneries and the sugar plantations. The growth in demand continued among these and other customers, new and old. Hawaiian Electric built its first expanded generating facility, the Waiau power plant, in 1938 on the shores of Pearl Harbor.

Sitting just a few hundred yards from the shoreline, the plant nevertheless escaped major damage in the surprise attack on December 7, 1941, that plunged America into World War II. Throughout the war the need for power never wavered, although company assets were strained by shortages and a lack of skilled labor. In 1944, the situation was relieved somewhat by the construction of a 35,000-kilowatt unit at the plant on Honolulu Harbor. The end of the war brought some relief, and then a steady expansion. A new engineering complex was built on the company's Ward Avenue property in 1947. A second

HAWAIIAN ELECTRIC WENT INTO THE ICE BUSINESS WHEN IT ACQUIRED PEOPLE'S ICE & REFRIGERATION COMPANY IN 1901. THE HORSE-DRAWN WAGONS WERE REPLACED IN THE 1920S, BUT HECO'S ICE OPERATION CONTINUED UNTIL 1948

facility, the Hicks plant, was built on the Honolulu waterfront and became operational in 1954. It was named for the company's seventh president, Leslie A. Hicks. The year before, in April 1953, a young structural engineer fresh out of the army started working in the Engineering Department at $420 a month—a move that was to impact on both my life and the company.

In 1959, two things altered forever the island lifestyle—the development of the jet engine, which would bring unprecedented numbers of tourists to the islands, and statehood, which sent a signal to entrepreneurs. Those who remember that time often do so with a sense of its boom-town atmosphere, that growth in all areas would be quick and lasting. This was reflected at Hawaiian Electric, where a new power plant at Kahe Point went on line in 1963.

In 1964, Hawaiian Electric Stock was offered for the first time on the New York Stock Exchange—seventy-three years after the company's initial capitalization of $20,000 in 1891.

Now it seemed every year was a milestone for the company, due in part to the vision and drive of the man spearheading it, Russell Hassler. Because of Hassler, the company acquired Maui Electric

Company in 1968 as a wholly-owned subsidiary. In that year, half of Hawaiian Electric's investment in distribution lines was underground, forty-three years after the start of the underground program. Also in 1968, the first of two 138,000-volt transmission lines was strung from Waiau across the mountain to Koolau Substation on the windward side. The following year the company spent $20 million on new facilities, completing an eighth generating unit at Waiau and installing the first combustion turbine there.

Again because of Hassler, the Hilo Electric Light Company became Hawaiian Electric's second wholly-owned subsidiary. That was in 1970, and Hassler was demonstrating the kind of visionary leadership that had a profound influence on me, personally, and on the company as a whole.

In 1971, the company filed for its first rate increase since 1955 and connected service for its 150,000th residential customer. That year fuel oil became the company's largest expense, taking twenty-five cents of every revenue dollar. The Kahe 4 plant was completed, along with the 138kv Iwilei substation.

The fuel oil situation of 1971 was merely a prelude to 1973, when the Mideast oil embargo presaged a stunning reduction in energy use. Meanwhile, the company reacted to an environment-conscious community and switched to the use of low-sulphur oil at its downtown and Waiau plants, and established its own Environmental Department. It was an era of unprecedented capital expenditures, including a $10 million water discharge project at the Kahe plant. The $63 million allocated for capital expenditures in 1980 was the largest construction budget in the company's history.

From the middle of the 1970s onward, Hawaiian Electric was concerned with the price and availability of fuel oil and the need to support alternate systems. OPEC's activities had made it clear that something besides fossil fuels would be required to reduce the country's dependence on foreign oil sources. Hawaii was and is more vulnerable to interruptions in supply and increases in oil prices than mainland states, and its oil imports exceed a billion dollars a year.

Against this background, Hawaiian Electric took part in a highly successful test of a 200-kilowatt MOD-OA wind turbine put into operation in 1980 at Kahuku, on Oahu's North Shore. The project

was developed and funded by the U.S. Department of Energy and the National Aeronautics and Space Administration. In 1982, a 3,000-kilowatt geothermal generator on the Big Island of Hawaii began feeding power into Hawaii Electric Light Company's system. The electricity was purchased by the company from the Research Corporation of the University of Hawaii in a plant operated by Hawaiian Electric Company's subsidiary, Hawaii Electric Light Company. However throughout 1981 and into 1982, fuel oil costs continued to take an increasing percentage of the company's revenues—66 percent in 1981.

Nevertheless, there were encouraging signs: The wind turbine performed better than any of the other three MOD-OA turbines on the mainland and in Puerto Rico; a request for proposals to develop geothermal power on the Big Island of Hawaii brought good responses; bagasse, the fibrous waste of sugar cane, continued to be burned on sugar plantations and unneeded power from mill and plantation operations was sold to the local utility.

Despite financial constraints, work proceeded on the early stages of the Hawaii Deep Water Cable project that one day may carry electrical energy from geothermal resources on the Big Island of Hawaii to the other Islands—an echo of that moment in 1881 when Attorney General Armstrong asked Edison about a cable carrying power from Kilauea Volcano.

In Hawaii, the ocean, as well as the wind, holds the promise of alternate energy. On February 18, 1982, the U.S. Department of Energy selected two companies for negotiations leading to the awarding of contracts for the conceptual design of two pilot plants dealing with Ocean Thermal Energy Conversion—OTEC. Hawaiian Electric became a participant on both projects with General Electric and the Ocean Thermal Corporation. Hawaiian Electric agreed to contribute engineering time to the conceptual design of interconnecting to the company utility grid an OTEC plant of 1,000 to 40,000-kilowatts.

Other events of that year were not so pleasant. Sales declined while maintenance and operating expenses increased. A recession took its toll, and in November, Hurricane Iwa tore across Oahu and Kauai and left millions of dollars worth of damage in its wake. It also left Hawaiian Electric with the task of rebuilding its transmission system

and assisting in the repair of damage to the electric utility on Kauai. The company sustained more than $7 million in damage to facilities and increased operating costs. All in all, it was a difficult year.

❦

That was our history, to July 1, 1983, when the corporate changes I felt were necessary went into effect. In retrospect, it is a history that is closely interwoven with events in the community and on national and international levels. The price of oil brought home to us what it was like to live in a global economy. The wars that have made Hawaii an important military base also generated corporate sales increases and forced the company to expand.

It was a success story that appeared to have reached its peak in the 1970s and left Hawaiian Electric facing a period of possible stagnation. When Hawaiian Electric Industries—HEI—came into being on that hot summer day in 1983, I thought it was slow in coming, but absolutely vital to continued corporate good health. HEI became the parent company of a single subsidiary then—Hawaiian Electric Company, which itself had two subsidiaries, Hawaii Electric Light Company, and Maui Electric Company.

The restructuring required approval from the Securities and Exchange Commission, the Hawaii Public Utilities Commission, the Internal Revenue Service, and also from our common stockholders and the holders of several issues of preferred stock. By the second quarter of 1983 we had all the approvals necessary, and we launched the new company.

Our history, from this point onward, becomes the brief but eventful history of HEI. It is a story of rapid changes, expansion, diversification—and being often misunderstood by the public at large and especially by some segments of the community who regard HEI as a threat. This was difficult for us, because we looked back on an involvement with our customers in Hawaii that spanned almost a century, and we felt we had earned the public's trust.

It occurred to me that perhaps we simply had not told our story very well, because the formation of HEI was legal and necessary. I said earlier that it was the result of choices a democratic system allowed us to make, and alternatives that economics forced us to consider. We looked at alternatives and made our choice: We drafted a

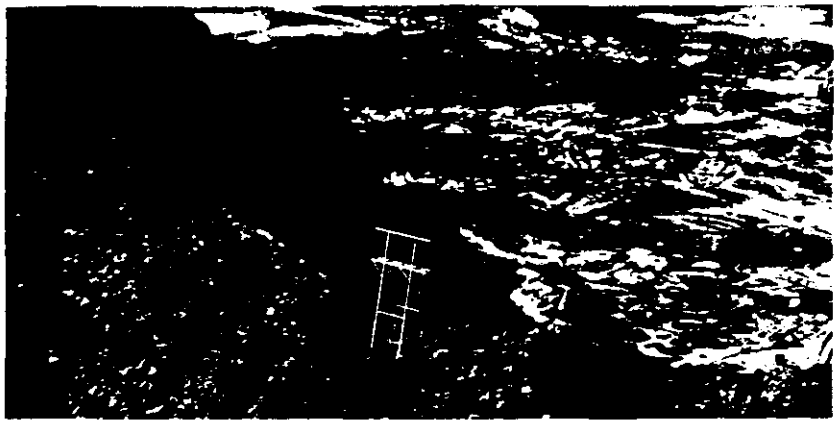
plan that would permit the corporation to grow and remain an attractive investment for our stockholders. We would maintain the electric company and its subsidiaries, and we would own other companies which would operate outside the electric utility industry. The idea was strength through diversity. The idea was to reduce our vulnerability to the slow growth, or even negative growth, that we saw coming.

The Public Utilities Commission approved the formation of HEI and imposed two dozen conditions to ensure that the electric company's ratepayers would be protected. HEI must report to the PUC on the company's consolidated financial results and intercompany charges. The electric utility is prohibited from lending funds to the non-utility parts of HEI. The conditions give the PUC remedies to take if it believes that HEI has acted in ways detrimental to the customers of the utility company.

Under these conditions, clearly set up to protect the electric company's customers, HEI drafted and adopted a mission statement that expresses its desire to be a responsible member of the community it serves. That statement says:

> "HEI will provide shareholders with consistent long-term growth in value through a group of companies that provide customers, principally in Hawaii, with quality products and services, based on strengths in management, engineering, technical services, finance and customer service derived from our strengths in the utility business.
>
> "In general, HEI and its men and women will take a major role in improving Hawaii's economy and quality of life.
>
> "In support of this mission, we will strive:
>
> To achieve a balance between the interests of our customers, owners, employees and the public.
>
> To provide quality service to our customers at reasonable cost.
>
> To use our resources for corporate growth and increased value to owners.
>
> To provide challenging employment opportunities.
>
> To be responsible corporate and individual citizens."

So in 1983, we had a long history, a new company, and a mission



WINDWARD OAHU'S GROWTH WAS MADE POSSIBLE LARGELY BY THE EXTENTION OF HAWAIIAN ELECTRIC'S TRANSMISSION SYSTEM OVER THE KOOLAU MOUNTAINS TO WINDWARD COMMUNITIES, SUCH AS KANEOHE IN THE DISTANCE

statement to fit the times. We spent a great part of 1983 working on a strategic plan that would serve the corporation for years to come. We did not rush into diversification, and we determined that we would enter new businesses that would allow us to use existing corporate resources. Within the electric company we increased productivity and cut our lost-time rate, continued to focus on renewable energy resources, and managed to achieve a slight increase in earnings. The year could be characterized as a time of preparation. In the following year we created a new non-utility subsidiary and filed for approval to create a second.

The year 1984 saw the birth of HEI Investment Corp., which in its first year accounted for 5 percent of HEI's net income. One of our first tasks after forming HEI was to establish the Hawaiian Electric Industries Charitable Foundation to support worthwhile causes in our community, and in 1984 we were able to put $1.8 million into the foundation—in keeping with the part of our mission statement that we would be responsible corporate and individual citizens.

Throughout the year we worked on another subsidiary that would be founded early in 1985, Hawaiian Electric Renewable Systems, Incorporated, or HERS, a company formed to position HEI as a real force in the alternate energy field. We looked forward to some interesting projects with HERS, and we were not to be disappointed.

Meanwhile, our utilities continued to be the strong supporting base. Each of the three subsidiaries had a good year in 1984 and overall recorded a 2.6 percent increase in kilowatt-hour sales. Hawaiian Electric started construction on a new 138,000-volt transmission line to add another power corridor into downtown Honolulu and improve reliability during emergencies. The utility also installed on-line computerized customer service information systems. We moved to bring our customers closer to our operations in HEI. At the annual stockholders meeting, approval was obtained for a two-for-one stock split that put HEI ownership within reach of a greater number of people. It helped more than 2,500 Hawaii citizens buy HEI stock, and coincidentally, HEI's stock price hit a new high early in 1985.

In fact, our stock that year was the second best performer in percentage increases among seventy-five electric utility companies analyzed by a major investment bank. The market price of HEI stock rose 33.9 percent that year and has increased over 100 per cent in the past four years.

By 1985, we were taking a hard look at our options, our strengths, our weaknesses, our opportunities here in Hawaii. One key in our operation was to provide essential services; I wanted to concentrate on that because of our corporate roots—we came from many years of providing necessary electrical services.

It was with the idea of providing a service that HEI formed Malama Pacific Corporation in 1985, to enter into a joint venture agreement with Gentry Pacific, Limited, for the development of HEI's 219-acre site at Heeia Kea Valley on Oahu's North Shore. We began the long process of seeking development approvals that would lead to the construction of 440 housing units on an island that badly needs housing. A portion of the units would be set aside for low-to-moderate income housing, five acres for commercial and industrial use, fifteen acres for agricultural purposes and four acres for park use.

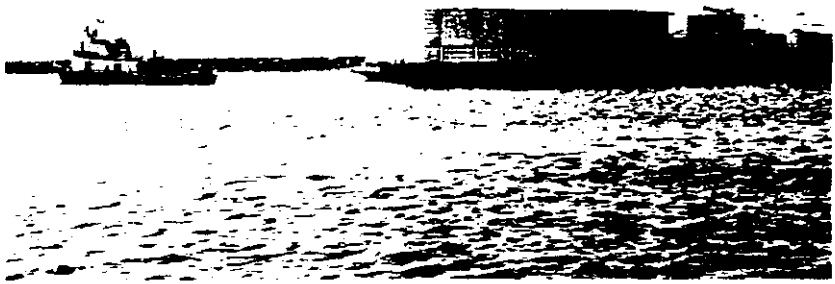
Simultaneously, HEI Investment Corp. was branching out; with four other corporate investors, the company made a major investment in the purchase and lease-back of a coal-burning power plant in Georgia, and invested in a venture capital fund in which all participants were utility holding companies, or their subsidiaries. That year HEI Investment Corp. contributed 9.4 percent to HEI's net income.

Equally satisfying was the drop in the price of oil and a decrease in the cost of electricity to our customers, the lowest level since 1981. Hawaiian Electric also signed new contract agreements with fuel oil suppliers that saved $18 million, a savings that was passed on to customers. It was notable that on the Big Island of Hawaii, Hawaii Electric Light bought 227 million kilowatt-hours of energy from renewable energy sources. Of the energy sold by the company, 40 percent came from sugar companies burning biomass fuel, 4 percent was generated by the experimental geothermal power plant at Pohoiki, and 1 percent came from small hydro sources and wind energy sources.

A year later, on October 1, 1986, we strengthened our diversification plan by purchasing Dillingham Corporation's Hawaii-based subsidiaries—Hawaiian Tug and Barge, and Young Brothers. Both were service-oriented companies. We were familiar with their neighbor island markets and we knew what was necessary to make them profitable and improve their services to customers. Just as important, the acquisition of these companies brought control of the companies back to Hawaii. Now it would be easier to monitor their operations and make sure they were serving the needs of the people of Hawaii, especially those people on the neighbor islands where the future growth of Hawaii would take place. In the same year we saw advances in geothermal development on the Big Island, and the dedication of Makani Moa'e, our windfarm at Kahuku on Oahu's North Shore. Next door to the windfarm, the Makani Ho'olapa site saw renewed activity as work resumed on the 3,200-kilowatt MOD-5B wind turbine, which we expect to set new standards in wind energy conversion.

Nineteen eighty-six saw two special observances. On July 21, Hawaiian Electric marked the 100th anniversary of the first demonstration of electric light on Oahu. It took place at Iolani Palace, where 100 years earlier King Kalakaua enjoyed inspecting his troops in the soft glow of Honolulu's first electric lights. What started as a modest centennial recollection grew into a full-scale pageant attended by thousands of people.

The second event came in November, when the Friends of Iolani Palace celebrated the centennial of King Kalakaua's fiftieth birthday with a reenactment of the events of the original celebration at the palace.



HAWAIIAN TUG & BARGE AND YOUNG BROTHERS PROVIDE ESSENTIAL INTERISLAND TRANSPORTATION THROUGHOUT THE HAWAIIAN ISLANDS

To me, these events brought us full circle in the sense that they recalled eventful days of the past—and what could be eventful days of the future.

HEI now had four divisions, and there was a decided air of confusion in some segments of the community about our goals. As noted earlier, we perhaps neglected to tell our story as well as we should have, and we found ourselves fielding questions. One of the most common questions was: "If any of the non-electric companies were to lose money, would HEI use electric revenues to bail the business out?"

The answer, of course, is no. The electric company's revenues are completely separate from HEI non-electric company activities. Hard on the heels of this question generally came another one: "If HEI is successful in its diversification, would it become some kind of local monopoly in the islands?"

Again, of course the answer is no—no more than the other diversified companies in Hawaii. "Monopoly" implies a lack of competition. HEI intends to be successful in its non-electric utility businesses by being competitive in freight transportation, financial services and real estate. In all three areas considerable competition does and will exist for HEI companies. And no monopoly is possible.

That was our situation going into 1987—when we once again expanded with the acquisition of the Hawaiian Insurance Group. It was an opportunity that comes but once, and we seized it.

So far we had financed our diversification—a cost of about $42 million—by selling newly-issued common stock with an aggregate value of $48 million, primarily through the dividend reinvestment program and the employee and customer stock purchase programs. HEI raises some $15 million each year by people not taking out their dividends but buying more stock instead.

Acquisition of the insurance group fit nicely into our diversification plan. So did the next company, the purchase of which would cause our financial services area to grow considerably. In 1987, we began the planning that would be finalized in 1988, and make the state's fourth largest financial institution a part of HEI. When we announced our intention to buy American Savings Bank, it came as a surprise to some in the community, and, candidly, to some in HEI. Originally, we did not foresee such a concentration on financial services, but the bank made it feasible.

Purchase of the bank was finally approved by the Federal Home Loan Bank Board, effective May 26, 1988. The price was $113.1 million. The seller was the American Savings and Loan Association in Salt Lake City.

We were pleased with the acquisition for several reasons, one of which was that it allowed us to meet one of our performance objectives ahead of schedule. We had set a goal of obtaining 25 per cent of HEI's earnings from non-utility companies by 1991. We expect that the bank will contribute about 15 percent of HEI's net earnings on an annualized basis, meaning we will meet that goal of 25 percent earlier than originally planned.

An important sidelight of our purchase of American Savings Bank was how HEI financed the acquisition. Two and one-half million new shares of stock were marketed and sold, not only in America, but in Japan and Europe, as well. The new issue, worth $77.2 million to the company, sold out quickly, a gratifying indication of the investment community's confidence in HEI.

As a holding company, we now operated in the four areas of Energy, Financial Services, Freight Transportation and Real Estate.

After a few short years of operation it became possible to draw a profile of HEI by highlighting the actions of each subsidiary as it progressed.

In Real Estate, Malama Pacific Corporation, in its joint venture with Gentry, frustrated by the city council and unable to get development approval, finally agreed to sell its interest in the 219-acre Heeia Kea property. MPC then bought a small downtown property and became a general partner in a New Mexico company, joining with three other real estate affiliates of other diversifying public utilities. That company is part of a venture to build resort homes in Flagstaff, Arizona.

The Financial Services Division has been busy and productive: the Hawaiian Insurance Group, the third largest locally owned casualty company, now has more than 55,000 policies in force, served primarily by 62 independent insurance agencies.

HEI Investment Corp. has invested in select real estate purchase lease-back transactions on the mainland, including Hershey Foods and six supermarkets leased to the Kroger Company. The value of real estate properties picked up by the company in 1987 alone was about $50 million.

In Freight Transportation, sales and revenues exceeded our expectations, but more importantly we have been able to improve significantly the quality of inter-island freight transportation and assistance to ships. Among other purchases was the largest and most sophisticated multi-product fuel oil barge in Hawaii—the 340-foot Ha'aheo, with its capacity of nearly 73,000 barrels. Another purchase was the 3,900-horsepower tug Manu'okekai, bringing our strength up to seven ocean tugs, four harbor tugs and twelve barges. In 1987, charter and inter-island towing service revenues were 10 percent above forecast. It has been gratifying to bring control of this operation back to Hawaii and see it progress.

Our largest subsidiary remains Hawaiian Electric, which in 1987 recorded its highest energy sales in history. Along with its subsidiary companies, Maui Electric and Hawaii Electric Light, the utilities contributed 82 percent of HEI's net income in 1987. As significant as this was, it probably drew less attention than another event—the

decision to buy power from independent suppliers rather than construct its own new generating units to meet future demands.

This is an historic decision, a departure from the way Hawaiian Electric has met the growing demand for electricity on Oahu in the past.

The decision came in October 1987. Hawaiian Electric announced it had signed letters of intent to purchase 346,000 kilowatts of capacity from two companies that proposed to build and operate power plants in Campbell Industrial Park. Hawaiian Electric noted that it remained committed to development of Hawaii's renewable energy resources, but until they are able to meet demand, new conventional power sources were necessary.

A contract was signed with Hawaii Cogeneration Associates, from which Hawaiian Electric will buy 200,000 kilowatts of power from a combined cycle plant consisting of two 70,000-kilowatt combustion turbines and a 60,000-kilowatt steam turbine. Although the contract has been revised, the first 70,000-kilowatt phase of the project is expected to be operational in 1989.

Hawaiian Electric also agreed to buy 146,000 kilowatts of power by 1992 from Applied Energy Services, Incorporated, of Arlington, Virginia. AES will construct and operate a plant burning low-sulphur coal with modern combustion technology that meets tough environmental standards.

I have been asked if this decision to buy power is a wave of the future, if Hawaiian Electric will become more and more a broker of power than a producer of power. The answer is that I think that is possible, and that in any case, the company should have the right to make that decision whenever necessary. A lot of electric companies on the mainland find the idea of buying power from independent producers is something they cannot accept. I think it is an option you have to consider, especially when the economics of regulated ownership are considered.

One effect of buying power from a source that uses coal instead of fuel oil is that it reduces Hawaii's dependence on foreign oil. If coal to produce power comes from foreign sources, they are likely to be those that are politically more stable, such as Canada or Australia.

There is coal in Alaska. We may have reached the point where we could safely purchase coal from the People's Republic of China.

The continuing need for power was underscored on September 1, 1987, when peak demand exceeded one million kilowatts for the first time in Hawaiian Electric's history. By the end of the year seven new records were set. Also by year end, Hawaiian Electric had spent $25 million on a special reliability program—replacement or upgrading of utility poles, development of a southern transmission corridor to contain three new 138-kv lines, building and replacing wood structures with steel towers in areas where there were strong winds, and increasing preventative maintenance to reduce the number of power interruptions.

Maui Electric, meanwhile, was purchasing Castle and Cooke's power plant and 11,500-volt transmission system on the Island of Lanai, making it responsible for generation and distribution of all electricity on the island—and also reducing rates by 3.5 percent on both Lanai and Maui.

Hawaii Electric Light, looking to the future, announced it would buy 5 percent of its energy requirements from a windfarm of 36 wind turbines at South Point. In 1987, Hawaii Electric Light bought 42 percent of its total kilowatt hour sales from other power producers. The company remained committed to the idea that the energy source of the future is geothermal, and planned at least two more transmission lines to the East Hawaii corridor.

Hawaiian Electric Renewable Systems, Incorporated—HERS—became the state's largest wind energy producer with the purchase of Kahua Ranch and Lalamilo windfarms from Earth Energy Systems, Incorporated. Makani Moa'e, the 9,000-kilowatt windfarm on the North Shore of Oahu, doubled its energy production of the year before, and in the process saved the equivalent of nearly 24,000 barrels of oil. Nearby, at Makani Ho'olapa, the MOD-5B wind turbine—the world's largest of its type—proved to be a showpiece of wind energy technology.

Our investments in wind energy were made to advance the technology of alternate energy to help Hawaii become more energy independent. We continue to monitor developments in all forms of alternate energy and will make future investments when there will be clear benefits to the people of Hawaii and to our shareholders.

This is a profile of Hawaiian Electric Industries, a company still in its infancy but a company dedicated to providing services to the people of Hawaii—and beyond. It is a different company than the one I became president of in 1981. At that time it was my personal conviction that of all our interest groups—owners, customers, employees—it was the owners who were not doing as well as they should be. The unions had done a good job and the employees were faring very well. The PUC was regulating rates and service realiability was up. My goal at the time was to get all three groups on an even keel. I think we did that.

We had other important decisions to make and it was sometimes difficult to move as fast as I wanted to. Bringing in some new employees to take part in the new company was a way of moving us out of the mode of thinking strictly electric utility, and more into a focus on diversification.

From the beginning I felt strongly that HEI should stay in Hawaii as long as we could, recognizing that there would come a time when we would have to make another very important decision: Will we be content to match our rate of growth to whatever the Hawaiian economy dictates, or do we go outside the state? I looked at the experiences of other Hawaii companies who went outside Hawaii and made mistakes that hurt them badly, and I concluded it would be best to stay in Hawaii, if we can.

It was a qualified decision, and perhaps not a final one. One consideration was, and is, the degree of acceptance of HEI activities. We found that the man on the street seemed to be pleased with what we were doing and saw our actions as positive. After all, we were bringing control of some activities back to Hawaii; we were providing essential quality services; we were providing stable employment.

Some people, however, seemed to hold the perception that we were getting too big, that HEI was an ego trip. We found it necessary, and surprising, that we still had to answer basic questions about the company:

Why was HEI formed? Because Hawaiian Electric could not sustain earnings growth from the utility business alone.

THE MOD-5B, ONE OF THE WORLD'S LARGEST WIND TURBINES, LOOMS OVER THE NEARBY WINDFARM OPERATED BY HAWAIIAN ELECTRIC RENEWABLE SYSTEMS

But isn't HEI the electric company? No. HEI *owns* the electric company. Common stockholders *own* HEI. Operations of the electric company are separate from HEI. The operations of all HEI companies are separate from each other.

But didn't you use ratepayers' money to start HEI or finance expansion into the other companies? No. Investments in the non-electric companies have come from new equity invested in HEI, or borrowings by HEI or its non-electric subsidiaries. Long-term and short-term investments in the non-electric companies totalled about $179 million at the end of 1987. In June of this year we raised nearly $78 million in new equity to finance, in part, the purchase of American Savings Bank. Later this year we will raise the remainder of the funds by issuing medium-term debt of HEI.

We also are asked if we intend to purchase other local businesses. For now HEI will focus on its four divisions, but if opportunities arise that fit into our plans, HEI will consider them.

Despite HEI's short life-span, we have been able to capitalize on

management strength and experience. From that we have developed a strategic vision in line with our mission statement, a setting out of what our aims are and where we want to be by the year 1991.

Essentially, we plan to become one of the top Hawaii-based companies in profitability and investment, with sustained growth in both earnings per share and dividends. We want one-fourth of HEI earnings to come from non-electric utility businesses by 1991. Other objectives are to meet more of Hawaii's electric energy needs on a competitive basis, continue to provide challenging employment opportunities and a creative work environment, maintain and foster cooperation and credibility between HEI and appropriate federal, state and county officials, and, of course, to continue to be responsible corporate and individual citizens by supporting worthy community efforts and organizations.

I believe our goals are in synchronization with the governor's economic development plan. We have cooperated in his work toward bringing that plan to fruition, and HEI will mesh well into such a plan. Basically we are not a high-tech company, but a medium-tech company with a strong engineering base and technically trained employees. So we fit easily into state efforts and programs designed to lead Hawaii away from a total reliance on the visitor industry.

The question arises: Why did we take on something like this, knowing it would be hard work and a struggle to make HEI a reality and to insure that it would survive and grow?

The answer is not complicated. I wanted to make the company better than it was. The job is not yet finished; we can be better, improve things for the owners and the employees, and make the company better for the state, in the end.

Each year I take the current succession plan to the Board of Directors. I am never as content as I would like to be with the plan, but we do have one, and I know that when I walk away the company will continue to thrive. I take a great deal of satisfaction in the realization that the company today is different from what it was in 1981.

I would like it to be even better when I leave it a few years from now. I would hope that the owners will say that they benefitted more than they expected to, that the employees would say it was a better place to work, and that the public can look at what we accomplished

and say, objectively, that the company is better than it was. I would hope the people of this state believe that if we had not been here to do what we did it would not have been the same, that we made a difference.

I have said that we are a different company right now, that if we stopped at this point, there has been a positive impact in our society because of HEI. But in my mind we are still in a formative period in many ways.

Once HEI has left that formative period and entered its era of steady growth and progress, I will consider that we have a more stable situation than we have today, and my personal goal is to take the company to that point. I look at HEI's future without apprehension, and I am proud of the management team the company has attracted. Much remains to be done, but much has been accomplished.

The year 1991 will mark the centennial of the Hawaiian Electric Company, the enterprise that started it all. That seems an appropriate time for me to step down from my leadership of the company.

Meanwhile, we will continue to build and grow and provide those essential services for the people of Hawaii that are even more necessary today than they were a century ago, when that demonstration at Iolani Palace showed the Islands their incandescent future.

THE END

"Actorum Memores simul affectamus Agenda!"

THE NEWCOMEN SOCIETY OF THE UNITED STATES

IN APRIL 1923, *the late L. F. Loree (1858-1940) of New York, then dean of American railroad presidents, established a group now known as "American Newcomen" and interested in Business History, as distinguished from political history. Its objectives center in the beginnings, growth, development, contributions, and influence of Industry, Transportation, Communication, the Utilities, Mining, Agriculture, Banking, Finance, Economics, Insurance, Education, Invention, and the Law—these and correlated historical fields. In short, the background of those factors which have contributed or are contributing to the progress of Mankind.*

The Newcomen Society of the United States is a nonprofit membership corporation chartered in 1961 under the Charitable Law of the State of Maine, with headquarters at 412 Newcomen Road, Exton, Pennsylvania 19341, some five miles east of Downingtown, Pennsylvania, and 32 miles west of the City of Philadelphia. Here also is located The Thomas Newcomen Memorial Library and Museum in Steam Technology and Industrial History, a reference collection, including microfilm, open to the public for research and dealing with the subjects to which the Society devotes attention.

Meetings are held throughout the United States of America and across Canada at which Newcomen Addresses are presented by leaders in their respective fields.

The approach in most cases has been a life-story of corporate organizations, interpreted through the ambitions, the successes and failures, and the ultimate achievements of those pioneers whose efforts laid the foundations of the particular enterprise.

The Society's name perpetuates the life and work of Thomas Newcomen (1663-1729), the British pioneer, whose valuable contributions in improvements to the newly invented Steam Engine brought him lasting fame in the field of the Mechanic Arts. The Newcomen Engines, whose period of use was from 1712 to 1775, paved a way for the Industrial Revolution. Newcomen's inventive genius preceded by more than 50 years the brilliant work in Steam by the world-famous James Watt.

The Newcomen Society of the United States is affiliated with The Newcomen Society for the Study of the History of Engineering and Technology, with offices at The Science Museum, South Kensington, London, S.W. 7, England. The Society is also associated in union with the Royal Society for the Encouragement of Arts, Manufactures and Commerce, whose offices are at 6 John Adam Street, London, W.C. 2, England.

Members of American Newcomen, when in Europe, are invited to visit the home of Thomas Newcomen at Dartmouth in South Devonshire, England, and to see the Dartmouth Newcomen Engine working.

"The roads you travel so briskly
lead out of dim antiquity,
and you study the past chiefly because
of its bearing on the living present
and its promise for the future."

—LIEUTENANT GENERAL JAMES G. HARBORD,
K.C.M.G., D.S.M., LL.D., U.S. ARMY (RET.)
(1866-1947)

Late American Member of Council at London
The Newcomen Society
for the study of the history of
Engineering and Technology